

4. The teleconferencing system of claim 8, wherein the workstations of a first and second participant have AV capabilities for originating and reproducing video images and spoken audio of the participants, and the workstation of a third participant has audio, but not video, capture and reproduction capabilities, and wherein the data conference and AV conference managers and the directory are configured to co-operate to enable a teleconference having a data conference among the first, second and third participants managed by the data conference manager and a videoconference among the first, second and third participants in which the first and second participants can reproduce the image and spoken audio of each other and the spoken audio of the each third participant, and the third participant can reproduce only the spoken audio of the first and second participants.

5. (Once Amended) The teleconferencing system of claim 8, wherein the workstations of a first and second participant have AV capabilities for originating and reproducing video images and spoken audio of the participants, and a third participant participates in the teleconference by telephone and wherein the data conference and AV conference managers and the directory are configured to co-operate to enable a[,] teleconference having a data conference among the first and second participants managed and a videoconference among the first, second and third participants, in which the first and second participants can reproduce the image and spoken audio of the other as well as the spoken audio of the third participant, and the third participant can reproduce only the spoken audio of the first and second participants.

6. The teleconferencing system of claim [28] 27, [further comprising] wherein the system is configured to:

(a) [a participant locator which] associate[s] a participant with an identifier entered when the participant logs into any one of a plurality of workstations, [whereby] and

(b) to route a subsequent call to initiate a videoconference with that participant [is routed] to the workstation at which [the] that participant is logged in.

7. (Once Amended) The teleconferencing system of claim [28] 27, [further comprising] wherein the system is configured to:

(a) [a services directory for] track[ing] the audio and video origination and reproduction capabilities associated with each workstation, [whereby] and

(b) to process a call, from a second to a first participant, and including a request for a service with respect to the first participant, [is processed] based on which capabilities are associated with the workstation associated with first participant.

8. (Once Amended) The teleconferencing system of claim 7, wherein the [data conference and AV conference managers] wherein the system is configured to:

(a) manage a teleconference among a plurality of participants such that, if at least one capability of the set of capabilities consisting of audio capture, audio reproduction, video capture, video reproduction, and the capability of connecting to the first network, is not available to at least one of the participants, each of the plurality of participants can participate in the teleconference to the extent of the capabilities available to the participant.

Sub F2
[10.] ~~9.~~ (Once Amended) The teleconferencing system of claim 7, [further comprising] wherein the system is configured to:

(b) [signal format convertor configured to] convert signals of one format to another format, [whereby the teleconferencing system can] to support originating and reproduction devices based on different signal format standards.

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[11.] ~~10.~~ (Once Amended) The teleconferencing system of claim [28] ~~27.~~ ⁶ wherein the AV path connects the workstation of a first participant at a first location to the workstation of a second of the participants at a second location via a third location, [and] the system further comprising:

~~D1~~
(a) an AV signal switcher at the third location, coupled to the AV path to receive and route the AV signals to a location other than the third location if the AV signals are intended to be processed at the other location.

Sub F3
[12.] ~~11.~~ (Once Amended) The teleconferencing system of claim 11, further comprising:

(a) at least a first and a second codec at the first and second locations respectively, each configured to compress the AV signals and decompress compressed AV signals and wherein video and audio, compressed by the first codec, can be routed from the first location to the second location via the AV signal switcher without being decompressed at the third location.

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[13.] ~~12.~~ (Once Amended) The teleconferencing system of claim ~~11.~~ ¹⁰ where in the video image and spoken audio of the first participant routed to the second location, via the third location, can be reproduced at the workstations of both the first and second participants.

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[14.] ~~13~~ (Once Amended) The teleconferencing system of claim [13] ¹¹~~12~~, further comprising a video mosaic generator for combining the captured images of a first and second participant into a mosaic image for reproduction at least one workstation.

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[15.] ~~14~~ (Once Amended) The teleconferencing system of claim [14] ¹²~~13~~, further comprising a distributed mosaic generator for combining a portion of the mosaic image with a captured image of a third participant to generate a composite mosaic image for production at least one workstation.

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[16] ~~15~~ (Once Amended) The teleconferencing system of claim [13] ¹¹~~12~~, further comprising an audio summer for receiving the captured audio of a first, second and third participant and combining the received audio of the second and third participants into an audio sum for reproduction at the workstation of the first participant.

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[18.] ~~17~~ (Once Amended) The teleconferencing system of claim [13] ¹¹~~12~~, [further comprising] wherein the system is configured to:

^{E2} (a) [at least one signal router for routing] route at least the AV signals among participant's workstations in such a way so as to optimize the carrying of AV signals between the workstations.


¹⁶
[19.] ~~18~~ (Once Amended) A teleconferencing system of claim [18] ¹⁵~~17~~, wherein the [router optimizes the signal] routing is optimized based on either the actual or anticipated state of the AV path.

¹⁷
[21.] ~~20.~~ (Once Amended) The teleconferencing system of claim [28] ⁶~~27~~, further comprising:

(a) a video mosaic generator for combining the captured images of a first and second participant into a mosaic image; and

(b) a distributed mosaic generator for combining a portion of the mosaic image with a captured image of a third participant to generate a composite mosaic image of the captured images of the first, second and third participants.

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[22] ~~21.~~ (Once Amended) The teleconferencing system of claim [28] ⁶~~27~~, further comprising:

 (a) a video mosaic generator, for combining the captured images of a first and second of the participants into a mosaic image of the captured images, whereby the mosaic image can be reproduced at the workstations of the first and second participants; [and] wherein the system is configured to

[(b) a close-up selector for] allow a participant to select[ing] the image one participant whose image is reproduced in the mosaic image [and replacing] upon which the mosaic image is replaced with the selected image.

¹⁹
[23] ~~22.~~ (Once Amended) The teleconferencing system of claim [28] ⁶~~27~~, further comprising:

(a) a video mosaic generator for the captured images of a first and second of the participants into a mosaic image of the captured images; and

(b) an audio summer for receiving the captured audio of first, second and third participants and combining the received audio of second and third participants into an audio sum for production at the workstation of the first participant.

Sub F4 > [24.] 23. (Once Amended) A method of [for] conducting a teleconference among a plurality of participants having workstations with associated monitors for displaying visual images, and with associated AV capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants, the workstations being interconnected by a first network, the network providing a data path for carrying digital data signals among the workstations, the method comprising the steps of:

- YB
- (a) managing a data conference during which data is shared in real-time among a plurality of the participants and displayed on the monitors of their respective workstations;
 - (b) moving AV signals representing video images and spoken audio of the participants among said workstations;
 - (c) managing a videoconference during which the video image and spoken audio of one of the participants is reproduced in real-time at the workstation of another of the participants;
 - (d) providing at least one AV reproduction device with associated capabilities of reproducing at least audio or video signals at a workstation;
 - (e) defining at least one directory of AV reproduction devices and each device's associated capabilities; and
 - (f) processing a request for a reproduction service to cause an appropriate AV reproduction device to provide the requested reproduction service to the workstation.

[25.] 24. (Once Amended) The method of claim [24] 23, further comprising the steps of:

(a) tracking the audio and video capabilities associated with each workstation; and

(b) processing a call, from a second to a first participant, by including a request for a service with respect to the first participant, based on the capabilities associated with the first participant.

[26.] 25. The method of claim [24] 23, further comprising the step of:

(a) managing a teleconference among a plurality of participants such that, if at least one capability of the set of capabilities consisting of audio capture, audio reproduction, video capture, video reproduction, and the capability of connecting to the first network, is not available to at least one of the participants, each of the plurality of participants can participate in the teleconference to the extent of the capabilities available to the participant.

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[27.] 26. (Once Amended) The method of claim [24] ¹23, further comprising the step of:

(a) converting signals of one format to another format to enable the teleconferencing system to support capture and reproduction devices based on different signal format standards.


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[28.] 27. (Once Amended) A teleconferencing system for conducting a teleconference among a plurality of participants, the system[s] comprising:

(a) a workstation associated with each of at least three participants, each workstation having at least one origination and at least one reproduction capability, each selected from the group consisting of audio, video and data origination/reproduction capabilities;

(b) a first network providing a data path for carrying digital data signals among the workstations;

(c) [a data conference manager for managing] wherein the system is configured to manage a real-time data conference during which images based on digital [shared] data carried among the workstations is displayed on the workstation monitors of a plurality of the participants;

(d) an AV path for carrying AV signals, representing video images and spoken audio of the participants;

 (e) a plurality of AV reproduction devices each having capabilities for reproducing audio or video signals at a workstation and configured to address a request for audio and/or video reproduction services generated at one of the workstations;

(f) a directory of each AV reproduction device and its associated capabilities; and

(g) an AV conference manager for managing the real-time reproduction of the video images and audio of one participant at the workstation of another participant; wherein the AV conference manager and directory [being] are configured to interact to address a request for an AV reproduction service, generated at a workstation, to cause an appropriate AV reproduction device to provide the requested reproduction service to the workstation.

Please add the following claims.

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F6
28. A teleconferencing system for conducting a teleconference among a plurality of participants, the systems comprising:

(a) a workstation

- (i) associated with each of at least two participants, and
- (ii) having at least one origination and at least one reproduction capability,
 - (1) each selected from the group consisting of audio, video and data origination/reproduction capabilities;

(b) an AV path

(i) configured to carry AV signals,

- (1) representing video images and spoken audio of the participants

(ii) among the workstations;

(c) at least one AV reproduction device

(i) having capabilities for reproducing audio or video signals

(1) at a workstation, and

(ii) configured to address a request

(1) for audio and/or video reproduction services

(2) generated at one of the workstations; and

(d) a directory of

(i) each workstation and its origination/reproduction capabilities, and

(ii) each AV reproduction device and its associated capabilities,

wherein the system is configured

(i) to manage the real-time reproduction

(1) of the video images and audio

(2) of one participant

- (3) at the workstation of another participant
- (ii) by interacting with the directory
- (iii) to address a request
- (1) for an AV reproduction service,
- (2) generated at a workstation,
- (iv) to cause an appropriate AV reproduction device
- (1) to provide the requested reproduction service to the workstation

and,

wherein the system is further configured

- (i) to associate a participant
- (1) with each workstation at which the participant logs in and
- (ii) to route a videoconference call,
- (1) for that participant,
- (2) to the workstation at which that participant is logged in.

29. The teleconferencing system of claim 28, wherein the workstations of a first and second participant have AV capabilities for originating and reproducing video images and spoken audio of the participants, and the workstation of a third participant does not have these capabilities, and wherein the system is configured to enable a teleconference having a data conference among the first, second and third participants and a videoconference between the first and second participants.

30. The teleconferencing system of claim 28, wherein the workstations of a first and second participant have AV capabilities for originating and reproducing video images and spoken audio of the participants, and the workstation of a third participant has audio, but not video, capture and reproduction capabilities, and wherein the system is configured to enable a teleconference having a data conference among the first, second and third participants and a videoconference among the first, second and third participants in which the first and second participants can reproduce the image and spoken audio of each other and the spoken audio of the each third participant, and the third participant can reproduce only the spoken audio of the first and second participants.

31. The teleconferencing system of claim 28, wherein the workstations of a first and second participant have AV capabilities for originating and reproducing video images and spoken audio of the participants, and a third participant participates in the teleconference by telephone and wherein the system is configured to enable a teleconference having a data conference among the first and second participants and a videoconference among the first, second and third participants, in which the first and second participants can reproduce the image and spoken audio of each other as well as the spoken audio of the third participant, and the third participant can reproduce only the spoken audio of the first and second participants.

32. The teleconferencing system of claim 28, wherein the system is configured to:

(a) track the audio and video origination and reproduction capabilities associated with each workstation,;

(b) process a call, from a second to a first participant, based on which capabilities are associated with the first participant.

33. The teleconferencing system of claim 28, wherein the system is configured to manage a teleconference among a plurality of participants such that, if at least one capability from the set of capabilities consisting of audio capture, audio reproduction, video capture, video reproduction, and the capability conducting a data conference is not available to any participant, each participant can participate in the teleconference to the extent of the capabilities available to that participant.

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34. The teleconferencing system of claim 28, wherein the system is further configured to:

(a) convert signals of one format to another format, whereby the teleconferencing system can support originating and reproduction devices based on different signal format standards.

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35. The teleconferencing system of claim 28, wherein the system is configured to combine the captured images of a first and second participant into a mosaic image for reproduction at least one workstation.

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36. The teleconferencing system of claim 28, further comprising an audio summer for receiving the captured audio of a first, second and third participant and combining the received audio of the second and third participants into an audio sum for reproduction at the workstation of the first participant.

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~~37~~. The teleconferencing system of claim ²³~~28~~, further comprising:

(a) at least one signal router for routing at least the AV signals among participant's workstations in such a way so as to optimize the carrying of AV signals between the workstations.

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~~38~~. The teleconferencing system of claim ²³~~28~~, wherein the system is further configured to:

(a) allow a participant to select the image one participant whose image is reproduced in the mosaic image and thereby replace the mosaic image with the selected image.

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39. A method for conducting a teleconference among a plurality of participants having workstations with associated monitors for displaying visual images, and with associated AV capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants, the workstations being interconnected by a first network, the network providing a data path for carrying digital data signals among the workstations, the method comprising the steps of:

(a) managing a data conference during which data is shared in real-time among a plurality of the participants and displayed on the monitors of their respective workstations;

(b) moving AV signals representing video images and spoken audio of the participants among said workstations;

(c) managing a videoconference during which the video image and spoken audio of one of the participants is reproduced in real-time at the workstation of another of the participants;

(d) providing at least one AV reproduction device with associated capabilities of reproducing at least audio or video signals at a workstation;

(e) defining at least one directory of AV reproduction devices and each device's associated capabilities;

(f) processing a request for a reproduction service to cause an appropriate AV reproduction device to provide the requested reproduction service to the workstation; and

(g) managing connections between participants by

(i) associating a participant

(1) with each workstation at which the participant logs in and

(ii) routing a videoconference call,

(1) for that participant,

(2) to the workstation at which that participant is logged in.

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The method of claim 39, further comprising the steps of:

(a) tracking the audio and video capabilities associated with each workstation; and

(b) processing a call, from a second to a first participant, by including a request for a service with respect to the first participant, based on the capabilities associated with the first participant.

41. The method of claim 39, further comprising the step of:

EX (a) managing a teleconference among a plurality of participants such that, if at least one capability of the set of capabilities consisting of audio capture, audio reproduction, video capture, video reproduction, and the capability of connecting to the first network, is not available to at least one of the participants, each of the plurality of participants can participate in the teleconference to the extent of the capabilities available to the participant.

REMARKS

In this Office Action, the Examiner has objected to certain claims and rejected the remaining claims. In response, Applicants have amended the claims and added other claims.

These amendments take into considerations the comments made during the Examiner interview on May 14, 1998. The Examiner is thanked for his courtesy extended during this interview.

Objections to the Claims

The claims have been objected to as follows:

2. The numbering of claims is not accordance with 37 CFR 1.126. The original numbering of the claims must be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. *When claims are added, except when presented in accordance with 37 CFR 1.121(b), they must be renumbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).*

This misnumbering dates back to the Preliminary Amendment B filed June 7, 1996 in which claim number 9 was skipped when an attempt was made to add claims 9-27. Consequently, the claims 2-27 were renumbered as 2-26 at the time that amendment was entered. Since the subsequent amendment also had the misnumbering, same renumbering was done before the